REMARKS

The Office Action dated January 22, 2004, has been received and reviewed.

Claims 1-51 are currently pending and under consideration in the above-referenced application. Each of claims 1-51 stands rejected.

Claims 52-65, which have been withdrawn from consideration for being drawn to a nonelected group of claims, have been canceled without prejudice or disclaimer.

Reconsideration of the above-referenced application is respectfully requested.

Rejections Under 35 U.S.C. § 112, Second Paragraph

Claim 30 stands rejected under 35 U.S.C. § 112, second paragraph, for purportedly being indefinite.

The Office has objected to use of the term "sonicating." It is respectfully submitted that one of ordinary skill in the art could readily determine that the term "sonicating" refers to a process in which ultrasonic vibrations are generated. Accordingly, use of the term "sonicating" in claim 30 does not render this claim indefinite.

It is, therefore, respectfully requested that the 35 U.S.C. § 112, second paragraph, rejection of claim 30 be withdrawn.

Rejections Under 35 U.S.C. § 102(b)

Claims 1, 3, 7-10, 13, 15, 17-23, 25-29, 31, 32, 36, 41-43, 47, and 49-51 stand rejected under 35 U.S.C. § 102(b) for being directed to subject matter which is allegedly anticipated by the disclosure of U.S. Patent 5,913,715 to Kirchner et al. (hereinafter "Kirchner").

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single reference which qualifies as prior art under 35 U.S.C. § 102. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Kirchner teaches a system and method for conditioning polishing pads that are used in chemical-mechanical polishing (CMP) processes. The method described in Kirchner includes

applying a conditioning reagent to a polishing pad, then using a conditioning subassembly of polishing equipment to mechanically abrade the pad. Col. 2, line 48, to col. 3, line 19. The conditioning reagent may include deionized water and hydrofluoric acid, buffered oxide etch (BOE) composition, or potassium hydroxide. Col. 2, lines 48-53. Mechanical abrasion of the polishing pad is effected while the conditioning reagent remains on the pad. Col. 3, lines 8-10. Thus, the conditioning reagents that are described in Kirchner will not degrade, dissolve, or otherwise damage the abrasive elements of the conditioning subassembly. Col. 5, lines 40-45.

Independent claim 1, in contrast, is directed to an apparatus that conditions polishing pads. The apparatus of independent claim 1 includes a supporting substrate that includes a conditioning surface and a plurality of abrasive elements adjacent to the conditioning surface. The abrasive elements comprise "a material that is degradable or dissolvable by at least one chemical that does not substantially degrade or dissolve a material of a polishing pad to be conditioned."

While the conditioning subassembly described in Kirchner, which is of conventional type, admittedly includes diamond abrasive particles (col. 4, lines 54-59), Kirchner lacks any express or inherent description that the diamond abrasive particles may be degraded or dissolved by at least one chemical that will not substantially degrade or dissolve a material of a polishing pad with which that conditioning subassembly is to be used. In fact, the Kirchner quite clearly discloses that the diamond abrasive particles of the conditioning subassembly described therein may be used along with the conditioning reagents to condition a polishing pad without damaging the abrasive particles. *See* col. 3, lines 8-10; col. 5, lines 40-45. Thus, the conditioning reagent described in Kirchner cannot dissolve or degrade the abrasive particles of the conditioning subassembly described therein.

Therefore, it is respectfully submitted that Kirchner does not anticipate each and every element of independent claim 1, as would be required to maintain the 35 U.S.C. § 102(b) rejection thereof.

Each of claims 3, 7-10, 13, 15, and 17-19 is allowable, among other reasons, for depending either directly or indirectly from claim 1, which is allowable.

Claim 8 is additionally allowable since Kirchner does not expressly or inherently describe that any of the diamond abrasive particles of any of the conditioning subassemblies disclosed therein may be located beneath a conditioning surface of that conditioning subassembly.

Claim 13 is further allowable because Kirchner neither expressly nor inherently describes that any of the conditioning subassemblies disclosed therein includes a supporting substrate which is secured to a rigid support.

Claim 17 is also allowable since Kirchner lacks any express or inherent description that any of the conditioning subassemblies disclosed therein includes a conditioning surface of a supporting substrate, adjacent to which the diamond abrasive particles are positioned, that is degradable or dissolvable by at least one chemical that does not substantially degrade or dissolve a material of a polishing pad to be conditioned with the conditioning subassembly. Rather, Kirchner quite clearly indicates that the conditioning reagent disclosed therein does not damage the conditioning subassembly (col. 5, lines 40-45), which is used simultaneously with the conditioning reagent (col. 3, lines 8-10).

Claim 18 depends from claim 17 and is additionally allowable because Kirchner does not appear to include any express or inherent description of a supporting substrate with a supporting surface that comprises at least one of silicon dioxide, iron, an iron alloy, copper, nickel, or tungsten.

Claim 19 is further allowable since the diamond abrasive particles of the conditioning subassemblies that are described in Kirchner are not degraded or dissolved by hydrofluoric acid (col. 3, lines 8-10; col. 5, lines 40-45) and because Kirchner does not disclose use of sodium hydroxide, potassium hydroxide, or hydrochloric acid to remove the disclosed diamond abrasive particles from a polishing pad.

Independent claim 20 recites a method for conditioning a polishing pad. The method of independent claim 20 includes abrading at least a portion of a polishing surface of the polishing pad with a conditioner that includes abrasive material. At least a portion of the polishing surface is then exposed to at least one chemical to remove particles of the abrasive material without substantially degrading or dissolving a material of the polishing pad.

Kirchner lacks any express or inherent description that the diamond abrasive particles of the conditioning subassembly described therein may remain in a polishing pad during conditioning of the polishing pad. Moreover, assuming, *arguendo,* that Kirchner did include some description of diamond abrasive particles breaking off into or becoming dislodged in a polishing pad during conditioning thereof, Kirchner neither expressly nor inherently describes that a polishing surface of a polishing pad may be exposed to at least one chemical that will remove such diamond abrasive particles without substantially degrading or dissolving a material of the polishing pad. Instead, Kirchner describes that a conditioning reagent and a conditioning subassembly that includes diamond abrasive particles may be used together without damaging the conditioning subassembly. Col. 5, lines 40-45.

As Kirchner does not expressly or inherently describe each and every element of independent claim 20, Kirchner does not anticipate each and every element of independent claim 20. Therefore, under 35 U.S.C. § 102(b), the subject matter recited in independent claim 20 is allowable over the subject matter described in Kirchner.

Claims 21-23 and 25-29 are each allowable, among other reasons, for depending either directly or indirectly from claim 20, which is allowable.

Claim 21 is also allowable since Kirchner does not expressly or inherently describe abrading at least a portion of a polishing surface of a polishing pad with a conditioner that includes an abrasive material comprising silicon dioxide.

Claim 23 is additionally allowable since Kirchner lacks any express or inherent description of exposing at least a portion of a polishing surface to hydrofluoric acid, sodium hydroxide, or potassium hydroxide to remove abrasive particles therefrom. Rather, the disclosure of Kirchner is limited to use of a conditioning reagent to remove glazes from polishing pads that have built-up during polishing processes.

Claim 26 is further allowable because Kirchner includes no express or inherent description of exposing at least a portion of a polishing surface of a polishing pad to hydrochloric acid to remove abrasive particles therefrom.

Claim 27 is additionally allowable since Kirchner neither expressly nor inherently describes wearing away a conditioning surface of a conditioner (*e.g.*, a conditioning subassembly disclosed therein) to expose abrasive material.

Claim 28, which depends from claim 27, is also allowable because Kirchner lacks any express or inherent description that a conditioning surface of a conditioner may be worn away be abrasive material that was previously released therefrom.

Independent claim 31 is directed to a system for conditioning a polishing pad. The system of independent claim 31 includes, among other things, a conditioner with a plurality of abrasive elements that comprise a material which is degradable or dissolvable by at least one chemical that does not substantially degrade or dissolve a material of a polishing pad to be conditioned with the abrasive elements.

Again, Kirchner does not expressly or inherently describe, or anticipate, a system that includes a conditioner with abrasive elements that comprise a material that is degradable or dissolvable by at least one chemical that does not substantially degrade or dissolve a material of a polishing pad to be conditioned therewith. Rather, Kirchner quite clearly explains that the diamond abrasive particles of the conditioning subassembly described therein may be used simultaneously with the conditioning reagent disclosed therein (col. 3, lines 8-10) without incurring any damage (col. 5, lines 40-45).

It is, therefore, respectfully submitted that, under 35 U.S.C. § 102(b), independent claim 31 recites subject matter which is allowable over that disclosed in Kirchner.

Claims 32, 36, 41-43, 47, and 49-51 are all allowable, among other reasons, for depending either directly or indirectly from claim 31, which is allowable.

Claim 41 is further allowable because Kirchner includes no express or inherent description that any of the conditioning subassemblies described therein includes abrasive elements beneath a surface from which the diamond abrasive particles thereof protrude.

Claim 49 is also allowable since Kirchner lacks any express or inherent description that any of the conditioning subassemblies disclosed therein includes a conditioning surface of a supporting substrate, adjacent to which the diamond abrasive particles are positioned, that is

degradable or dissolvable by at least one chemical that does not substantially degrade or dissolve a material of a polishing pad to be conditioned with the conditioning subassembly. Rather, Kirchner quite clearly indicates that the conditioning reagent disclosed therein does not damage the conditioning subassembly (col. 5, lines 40-45), which is used simultaneously with the conditioning reagent (col. 3, lines 8-10).

Claim 50 depends from claim 49 and is additionally allowable because Kirchner does not appear to include any express or inherent description of a supporting substrate with a supporting surface that comprises at least one of silicon dioxide, iron, an iron alloy, copper, nickel, or tungsten.

Claim 51 is further allowable since the diamond abrasive particles of the conditioning subassemblies that are described in Kirchner are not degraded or dissolved by hydrofluoric acid (col. 3, lines 8-10; col. 5, lines 40-45) and because Kirchner does not disclose use of sodium hydroxide, potassium hydroxide, or hydrochloric acid to remove the disclosed diamond abrasive particles from a polishing pad.

In view of the foregoing, it is respectfully requested that the 35 U.S.C. § 102(b) rejections of claims 1, 3, 7-10, 13, 15, 17-23, 25-29, 31, 32, 36, 41-43, 47, and 49-51 be withdrawn.

Rejections Under 35 U.S.C. § 103(a)

Claims 2, 4-6, 11, 12, 14, 16, 24, 30, 33, 34, 35, 37-40, and 44-46, and 48 have been rejected under 35 U.S.C. § 103(a).

The standard for establishing and maintaining a rejection under 35 U.S.C. § 103(a) is set forth in M.P.E.P. § 706.02(j), which provides:

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim

> limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Kirchner

Claims 2, 4-6, 16, 24, 35, 37-40, and 48 stand rejected under 35 U.S.C. § 103(a) for being drawn to subject matter which is assertedly unpatentable over the subject matter taught in Kirchner.

Claims 2, 4-6, and 16 are each allowable, among other reasons, for depending either directly or indirectly from claim 1, which is allowable.

Claim 6 is additionally allowable because Kirchner does not teach or suggest that any of the conditioning subassemblies disclosed therein includes abrasive elements, such as the disclosed diamond abrasive particles, that are completely embedded with the diamond abrasive particle-carrying surface thereof.

Claim 16 is further allowable since Kirchner lacks any teaching or suggestion that any of the conditioning subassemblies thereof may include a diamond substrate for supporting the diamond abrasive elements thereof.

Claim 24 is allowable, among other reasons, for depending directly from claim 20, which is allowable. Claim 24 is also allowable since Kirchner does not teach or suggest that iron, iron alloy, copper, nickel, or tungsten may be used to form the abrasive elements of any of the conditioning subassemblies disclosed therein. Rather, the teachings of Kirchner are limited to use of conditioning subassemblies that include diamond abrasive particles.

Each of claims 35, 37-40, and 48 is allowable, among other reasons, for depending either directly or indirectly from claim 31, which is allowable.

Claim 39 is additionally allowable because Kirchner does not teach or suggest that any of the conditioning subassemblies disclosed therein includes abrasive elements, such as the

disclosed diamond abrasive particles, that are completely embedded with the diamond abrasive particle-carrying surface thereof.

Claim 48 is further allowable since Kirchner lacks any teaching or suggestion that any of the conditioning subassemblies thereof may include a diamond substrate for supporting the diamond abrasive elements thereof.

Kirchner in View of Southwick

Claims 11, 12, 14, 34, and 44-46 have been rejected under 35 U.S.C. § 103(a) for reciting subject matter which is purportedly unpatentable over the teachings of Kirchner, in view of teachings from U.S. Patent 5,782,675 to Southwick (hereinafter "Southwick").

Claims 11, 12, and 14 are all allowable, among other reasons, for depending either directly or indirectly from claim 1, which is allowable.

Claims 34 and 44-46 are each allowable, among other reasons, for depending either directly or indirectly from claim 31, which is allowable.

It is also respectfully submitted that a *prima facie* case of obviousness has not been established against any of claims 11, 12, 14, 34, or 44-46, as is required to maintain the 35 U.S.C. § 103(a) rejections of these claims.

The teachings of Southwick are directed to, among other things, polishing apparatus that include nonabrasive refurbishing elements (col. 3, lines 63-66), which may be comprise a brush including bristles of a resilient, flexible material that will not abrade a polishing pad or damage any of the features thereon (*see, e.g.,* col. 5, lines 16-20).

One of ordinary skill in the art would have no reason to expect that the asserted combination of teachings from Kirchner and Southwick would work. In particular, the nonabrasive, resilient, flexible bristles of the apparatus described in Southwick would not abrade the glaze on a polishing pad, as is taught in Kirchner. Conversely, use of the diamond abrasive particles of Kirchner to condition the fixed-abrasive polishing pads taught in Southwick would damage the fixed-abrasive polishing pads.

Moreover, Southwick teaches away from both the subject matter recited in the claims of the above-referenced application and that taught in Kirchner. Specifically, the claims recite apparatus which include abrasives for the purpose of conditioning polishing pads and Kirchner teaches the use of conditioning subassemblies that include diamond abrasive particles for the same purpose. Southwick, in contrast, notes that abrasives could damage fixed-abrasive polishing pads (*see* col. 5, lines 16-20), teaching instead the use of nonabrasive brushes to condition such pads.

For these reasons, one of ordinary skill in the art would not have been motivated to have combined the teachings of Kirchner with those of Southwick in the manner that has been asserted.

Further, Kirchner and Southwick, taken either individually or together, do not teach or suggest each and every element of any of claims 11, 12, 14, 34, or 44-46.

With respect to claims 11 and 44, Kirchner and Southwick both lack any teaching or suggestion of a supporting substrate for diamond abrasive particles (Kirchner) or nonabrasive bristles (Southwick) that is pliable.

Kirchner and Southwick also lack any teaching or suggestion of a supporting substrate for diamond abrasive particles (Kirchner) or nonabrasive bristles (Southwick) that comprises at least one of a paper, a paper-like compound, a textile, a mat of material, or a mesh of material, as recited in claims 12 and 45.

Additionally, Kirchner and Southwick neither teach nor suggest abrasive elements that comprise filaments, as required by claims 14 and 46. Instead, Kirchner teaches abrasive *particles*, while Southwick teaches *nonabrasive* filaments.

As a *prima facie* case of obviousness has not been established against any of clams 11, 12, 14, 34, or 44-46, it is respectfully submitted that, under 35 U.S.C. § 103(a), each of these claims recites subject matter which is allowable over the teachings of Kirchner and Southwick.

Kirchner in View of Allman

Claims 30 and 33 both stand rejected under 35 U.S.C. § 103(a) for being directed to subject matter which is allegedly unpatentable over the teachings of Kirchner, in view of teachings from U.S. Patent 5,868,608 to Allman et al. (hereinafter "Allman").

Claim 30 is allowable, among other reasons, for depending directly from claim 20, which is allowable.

Claim 33 is allowable, among other reasons, for depending directly from claim 31, which is allowable.

In view of the foregoing, withdrawal of the 35 U.S.C. § 103(a) rejections of claims 11, 12, 14, 34, and 44-46 is respectfully requested.

CONCLUSION

It is respectfully submitted that each of claims 1-51 is allowable. An early notice of the allowability of each of these claims is respectfully solicited, as is an indication that the above-referenced application has been passed for issuance. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,

Brick G. Power
Registration No. 38,581
Attorney for Applicant
TRASKBRITT, PC
P.O. Box 2550
Salt Lake City, Utah 84110-2550
Telephone: 801-532-1922

Date: April 22, 2004

BGP/nj:dp
Document in ProLaw